Patent claims

1. A circuit arrangement for two-wire/four-wire conversion in a DMT system, which is connected to a digital reception path (1), a digital transmission path (2) and also an analog transmission/reception path (3) and which has an echo cancellation device (12) in the time domain, the arrangement having a device (20) for adaptation of the echo cancellation in the frequency domain, wherein the echo cancellation device is nonlinear; and the device (20) for adaptation of the echo cancellation has a first linear model (21), a nonlinear model (22) and also a second linear model (23); and the coefficients of the nonlinear model which are determined in the device (20) for adaptation of the echo cancellation can be transferred to a nonlinear unit (14) of the echo cancellation device (12).

2. The circuit arrangement as claimed in one of the preceding claims, wherein the device (20) for adaptation of the echo cancellation carries out the adaptation by means of a pilot tone.

3. The circuit arrangement as claimed in either of claims 1 and 2, wherein the first linear model (21) and the second linear model (23) of the device (20) for adaptation of the echo cancellation are in each case formed by a complex number.

4. The circuit arrangement as claimed in one of claims 1-3, wherein the nonlinear model (22) of the device (20) for adaptation of the echo cancellation is formed by a Taylor series.

5. The circuit arrangement as claimed in claim 4, wherein the Taylor series of the nonlinear model (22) is calculated up to the quadratic element.

6. The circuit arrangement as claimed in one of the preceding claims, wherein a linear echo cancellation device (18) in the frequency domain is connected in parallel with the device (20) for adaptation of the echo cancellation.

7. A method for attenuating echo signals in a circuit arrangement for two-wire/four-wire conversion of a signal generated by multicarrier modulation with orthogonal subchannels,
the modeling being effected in the frequency domain of the signal, while the echo cancellation is effected in the time domain of the signal, wherein the echo cancellation device is nonlinear; and the device (20) for adaptation of the echo cancellation has a first linear model (21), a nonlinear model (22) and also a second linear model (23); and the coefficients of the nonlinear model which are determined in the device (20) for adaptation of the echo cancellation are transferred to a nonlinear unit (14) of the echo cancellation device (12).

8. The method as claimed in claim 7, wherein the modeling of the nonlinearities is effected using a pilot tone.

9. The method as claimed in either of claims 7 and 8, wherein the nonlinearities are mapped by a Taylor series.

10. The method as claimed in claim 9, wherein the Taylor series is terminated after the quadratic element.

11. The method as claimed in one of claims 7-10, wherein linear echo compensation is carried out in the frequency domain of the signal.

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